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100 POUNDS OF CINCHONA BARK IS A NORMAL LOAD FOR THIS BOY OF ECUADOR (Bulletin No. 2)

Bulletin No. 1, October 10, 1949

Guam Shifts from Naval to Civilian Rule

GUAM, the United States's west Pacific coconut-crested outpost, is shifting from military to civilian control. The Department of the Interior will, after a transition period, formally take over the faraway island that figured so importantly in the Japanese war. Since 1898, when America won Guam from Spain, the United States Navy has been the administrator, except for the short period of Japan's conquest during World War II.

About 30 miles long and up to 12 miles across, Guam has the form, roughly, of a footprint. The narrow arch, only four miles wide, separates the island into two contrasting sections. The northern part rises into plateau lands, heavily forested except in farming districts. More rugged lands lie in the southern section, with hills reaching 1,300 feet high in the southwest. Steep cliffs rim the coast at many places.

Airfields, Docks, Roads Built

This sleepy tropical island was transformed into a key military and naval base in the closing year of the drive on Japan. The conversion program picked up momentum with the coming of peace, which permitted development on a permanent basis.

Today Guam has two airfields, both built on the level land of its northern plateau. The large natural harbor at Port Apra on the southwest coast includes facilities and mooring space for more than 40 ships. It also has submarine pens, dry docks, and a breakwater to protect the new installations against destructive typhoons. Road improvements include four-lane highways.

This is a vast change from the prewar Guam, whose defenses in 1941 were weaker than those in 1920 because the United States honored the demilitarization terms of the Washington Naval Conference. Situated about 3,750 miles closer to the Far East than is Pearl Harbor, the island now plays a vital role as a station on the supply line to American forces in Okinawa and Japan.

War Destroyed Many Coconut Trees

The reconstruction of cities and the revival of normal trade, however, are still incomplete. Agaña (illustration, inside cover), the capital city, five miles north of Port Apra, was leveled during the recapture of the island from Japan in 1944. By mid-1948 a new Guam Congress building had emerged from the rubble, but there is still considerable need for new construction, particularly housing. This holds true for other settlements on the island.

In prewar years Guam's chief cash crop was copra, but many of the island's coconut trees (illustration, next page) were either destroyed by the war or have been cut to make room for the new developments. Copra exports averaged about 3,000 tons annually before the war, but no shipments at all were made in 1948.

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P. SIMPSON

A CHAMORRO HOUSEWIFE DRIES CLOTHES BESIDE A CORAL STREET IN AGAÑA, GUAM'S CAPITAL

Coconut leaves on bamboo supports are her drying rack. The Chamorros, natives of Guam (Bulletin No. 1), descend from Indonesian, Spanish, and other strains. They numbered about 24,000 before the war, but now are eclipsed by the influx of workers and military personnel from the Philippines and the United States.

or water buffalo, is Guam's hard-working beast of burden.

Bulletin No. 2, October 10, 1949

Ecuador Knows Constant Threat of Nature

TOWERING snow-tipped peaks are normal scenic background in Ecuador. But the beauty is only skin deep. Under the surface, intermittent rumbling warns villagers that at any moment an eruption may occur. Smoke and steam pluming from open craters is another constant reminder.

Earthquake, the twin of volcanic action, is also ever near. The central part of Ecuador, the South American country's most populous region, still is digging out from last summer's devastating earthquakes.

Avenue of Volcanoes

The hard-hit towns and hamlets of Ecuador's high inland valleys (map, next page) lie along the famous "Avenue of Volcanoes." In irregular formation, a score of nature's mountain giants, some of them still active volcanoes, rise on either side of the central rail and highway lanes that link the port of Guayaquil with Quito, the capital.

Mount Chimborazo, once thought to be the highest of the Andes, rears a snowy head at 20,577 feet. Across the valley, to the northeast, Cotopaxi, "the incomparable," rises 19,344 feet—the world's championship height for an active volcano.

Regions of great mountains seem to be particularly susceptible to the violent movements of the earth's crust which we know as earthquakes. In and near Ecuador's stricken area are more perpetually ice-crowned peaks than can be found in such small space anywhere else in the world.

The phenomenon is particularly arresting since this country, whose very name means equator, is astride the world's hot-weather mark. The lowland heat causes a high snow line—about 15,000 feet above sea level.

Concentrated in this high heartland are some three-fourths of Ecuador's roughly 3,000,000 people. Overwhelmingly Indian in blood and tradition, they make their living chiefly by stock grazing and family gardening. In the market towns and villages they sell their colorfully woven and embroidered articles of clothing, rugs, and blankets. They trudge along high-altitude paths carrying tremendous loads on their backs (illustration, cover).

Ambato, Garden City, Ruined

In addition to the old Spanish-colonial capital, Quito, just beyond the earthquake-battered districts, the highland also contains many of the nation's most important settlements.

Wrecked Ambato was the republic's third-ranking commercial center. It was known as the garden city of Ecuador, and was the market for neighborhood fruits and vegetables, as well as the hub for such industrial activities as flour milling and textile making.

The area of destruction around Ambato, which holds a number of other towns and villages reported demolished, is close to both Chimborazo and Tungurahua. This latter long-active volcano was reported again in eruption, with masses of earth sliding away from its sides and burying near-by houses and hamlets.

To counteract this loss, United States officials have been encouraging the Chamorros, natives of Guam, to increase their crop agriculture. Before the Japanese attack, home-grown corn was the island's chief food staple. Other crops included rice, sweet potatoes, tapioca, and taro, and such tropical fruits as bananas, avocados, mangoes, and papayas.

The transformation of Guam into a key defense base has sent the population zooming upward. At the close of 1948 it was estimated at more than three times its prewar figure of 24,000. The Chamorros, who composed most of the prewar population, are now outnumbered by Filipino laborers, Civil Service workers, and military personnel which have been brought in to speed reconstruction and man the new installations.

The 215-square-mile island, largest and southernmost of the Marianas group, was discovered in March, 1521, by Magellan—the first of the so-called South Sea Islands to be visited by the white man. Forty years later Guam became a Spanish possession.

NOTE: Guam is shown in a large-scale inset on the National Geographic Society's map of the Pacific Ocean. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

For further information, see "Victory's Portrait in the Marianas" (17 paintings), in the *National Geographic Magazine*, November, 1945*; "Springboards to Tokyo," October, 1944; and "Guam—Perch of the China Clippers," July, 1938. (*Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00.*)

See also, in the GEOGRAPHIC SCHOOL BULLETINS, November 10, 1947, "Ujelang Beckons Bikinians; Guam Rebuilds."

P. SIMPSON

TO ROOF THEIR HOUSE THESE GUAM YOUNGSTERS BRING HOME PART OF THE FOREST'S COVER

Palm fronds piled high on the buffalo cart will be plaited together and fastened to the sloping gables of their simple home. Many coconut trees were destroyed during World War II, bringing to a standstill the island's chief cash crop, copra (dried coconut meat). The patient but temperamental carabao, or water buffalo, is Guam's hard-working beast of burden.

Bulletin No. 3, October 10, 1949

Rice Revives Camargue, France's "Wild West"

THE cowboy country of southern France, Old World counterpart of the American "Wild West," is beginning an agricultural revival.

For the first time since Roman days crops are vying with grazing as a livelihood for the inhabitants of the Camargue. This Rhône River delta was once a rich alluvial plain that rivaled the Nile Valley in fertility. In recent times it has been noted chiefly for the herds of cattle and sheep and wild horses which graze on its scanty vegetation. The cowboys of the Camargue, known as "guardians," cover the ground on stocky white horses peculiar to the region.

Was Commissary to Roman Legions

But now rice is being introduced on the marshy delta. Results to date have been so encouraging that the French government hopes to make this grain an important addition to its expanding agriculture. The 1947 yield was 2,900 tons. It is hoped that by 1952 the area will supply one-tenth of France's annual rice requirement of 150,000 tons.

Since the days of the Roman Empire, when the Camargue raised grain to feed the imperial legions in Gaul, the district has been of little economic importance. It is a desolate triangle of land formed by the division of the Rhône into two branches about 26 miles north of the Mediterranean. Salt marshes and stagnant lagoons, particularly in the southern portions, characterize the area. Its big sheets of water—the largest of which, the Etang (pond) de Vaccarès, covers 23 square miles—attract wild ducks, herons, and other fowl. Sportsmen often hunt in the region.

Camargue cattle lack the beefiness for which the meat packers pay high prices. In recent decades they have been used chiefly for bullfighting. The Camargue is credited with originating *course de toros,* an almost bloodless type of bullfighting still popular in the villages. In this dangerous sport the *razeteurs,* or participants, must seize a cockade from the forehead or horn of the bull. The animal is seldom harmed, but special agility and skill are required of the razeteur.

Silt Has Ruined Ancient Roman Port

Some crops, principally wheat and oats, have been cultivated, and vines have been planted on a few pieces of higher ground reclaimed from the marshes. However, lack of irrigation and the great areas of swampy wasteland have greatly limited production.

Arles, the chief city of the region, at the fork of the Rhône, was founded by the Greeks in the sixth century before Christ. It later became the Roman capital of Gaul, leading port of the Rhône Corridor. Silt deposits have made the port of little importance today.

Saintes Maries de la Mer, at the southwestern tip of the district, was the legendary landing place of a group of Christians exiled from Judea after the Crucifixion. Supposedly among the small number were Mary Jacob, sister of the Virgin; Mary Salome, mother of James and John; their

A little to the south, battered Riobamba is surrounded by majestic mountains, including the volcano Sangay, once known as the "Flaming Terror" of the Andes, and still the uneasy source of ashes that occasionally litter the city streets. Capital of Chimborazo Province, Riobamba normally is a busy agricultural center, with a history that reaches back to pre-Inca days.

Still another flourishing town struck by the earthquake is Latacunga, situated to the north on the road to Quito. In the shadow of Mount Cotopaxi, this settlement has its roots literally in volcanic lava and pumice stone. Travelers remember it for an excellent airport and its Indian atmosphere.

NOTE: Ecuador is shown on the Society's map of South America.

For additional information, see "Sea Fever," in the *National Geographic Magazine* for February, 1949; "Quinine Hunters in Ecuador," March, 1946*; "From Sea to Clouds in Ecuador," December, 1941; "Mrs. Robinson Crusoe in Ecuador," February, 1934; and "Volcanoes of Ecuador," January, 1929.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, October 6, 1947, "Gateway Guayaquil Ships Ecuador's Products."

THE CORE OF ECUADOR IS THE MOUNTAIN-WALLED CORRIDOR FROM QUITO SOUTH

Geographic-Palomar 4-Year Sky Survey Starts

THE heavens above are being brought down to earth. Stars completely invisible to the naked eye are having their pictures taken. Two thousand picture-maps will be put into the most far-reaching atlas-album of the sky in the history of mankind.

These reproductions of photographic plates, each 14 inches square, will form a record of four years' research just beginning on Palomar Mountain in California. There, 45 miles north of San Diego, the National Geographic Society-Palomar Observatory Sky Survey has already put to work the big 48-inch Schmidt telescopic camera, teammate of the new 200-inch Hale telescope.

Stone-Age Men Knew Constellations

Results already obtained in "warm-up" activity include the finding of a new baby planet or asteroid which passes closer to the sun than any other known object except a comet. Also recorded was the North American Nebula, a section of the Milky Way shaped like that continent.

Through the ages interest in the stars has developed from primitive curiosity to one of the most intricate of studies. That Stone-Age men followed the same constellations that we see today (illustration, next page) is proved by rough drawings in ancient caves.

Not until the invention of the telescope, however, could astronomers really begin to see their way about the universe. A pioneer in the making and use of this instrument, Galileo in the early 1600's discovered hundreds of thousands of new stars, noted Jupiter's moons, the rings of Saturn, the craters of the moon, and spots on the sun.

A half century later, Sir Isaac Newton, who also introduced a new type of telescope, made known his law of gravitation, which accounted for the movements of the solar system and made accurate predictions possible. By the middle 1800's the infant science of photography was available to see stars no human eye could detect, and to provide permanent records for detailed study.

Schmidt Telescope Is Worlds Ahead of First Maps

Growing larger and larger, the modern telescope—in reality, powerful high-precision cameras—are pushing out the boundaries of space. Palomar's Big Schmidt will make photographs of millions of stars whose complete identification will require centuries of work by astronomers.

As a mapper of the universe, the versatile Schmidt is literally worlds ahead of the first crude efforts of man to chart his surroundings and the relatively few stars he could see with the unaided eye. The earliest-known map of any kind—a 4,500-year-old baked-clay tablet found in Babylonia—simply shows a river valley. Ancient Mediterranean seafarers used charts. A land survey of the Nile Valley was made in the 13th century before Christ.

The Chinese, Persians, Greeks, and Romans were all active in map making—especially the Greeks. The first-known atlas was a map collection by the Greco-Egyptian astronomer and geographer, Ptolemy, who

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servant, Sarah, said to be an Ethiopian; and Mary Magdalen. The first three spent the rest of their lives at this spot which had given them haven. Their bones now rest in the 13th-century church. Those of Sarah are the object of special veneration by hundreds of Gypsies who make yearly pilgrimages to her tomb from all over the country. She is the patron saint of these nomads who are reputed to be her descendants.

A short distance to the west of the triangle rise the walls of Aigues Mortes (Dead Waters). These are generally considered the finest example of medieval military architecture in existence. Most famous historic town of the delta, Aigues Mortes was made a port in the 13th century by St. Louis. From it his Crusaders set sail for the Holy Land. The Rhône has built up the coast line so that the town is now miles from the sea.

The reverse is true of Saintes Maries de la Mer. On the shore in Bible times, the Gypsy Mecca became an inland town when the Rhône built up its beach. A few centuries ago it was several miles from the sea. The turn of the tide of erosion in recent years has brought the sea back to the village of the Three Marys. The Mediterranean has so threatened it that massive dikes have been built to save it from inundation.

NOTE: The Camargue (Ile de la Camargue) may be located on the Society's map of Europe and the Near East.

For additional information, see "Camargue, the Cowboy Country of Southern France," in the *National Geographic Magazine* for July, 1922.

CLIFTON ADAMS

HEART OF THE CAMARGUE HERDSMAN'S HOME IS THE WHITEWASHED KITCHEN

Sitting on the hearth, the Camargue housewife cooks the family meal over its open fire, as did her mother and her grandmother. The huge fireplace extends almost the entire length of the raftered kitchen. At the right is an oven large enough to bake a batch of bread for hungry herdsmen. Although the "guardian's" wife takes the same pride in her cooking skill that he does in horsemanship, her activities are not all domestic. She is often an excellent equestrienne and rides with her husband to cattle brandings and rodeos with all the skill of a Calamity Jane or an "Annie" with a gun.

Whitehorse to Be Stage for Arctic Maneuvers

THE remote and frigid little town of Whitehorse, "metropolis" of the area where United States and Canadian troops will stage joint defense maneuvers next winter, has been riding the tides of boom and decline for half a century.

The settlement is the result of the first wave of prosperity caused by the Klondike gold rush of 1897-98. Prospectors pushing their way into the wild and mountainous Yukon Territory to reach the gold fields of the Dawson region camped wherever their progress was halted by rapids or steep mountain passes.

Way-station on Gold-fields Route

One of these camping grounds became Whitehorse. The town owes its existence to Whitehorse Rapids which churn through Miles Canyon about a mile upstream. Prospectors, after shooting the turbulent waters, camped along the river to get their breath and reorganize their equipment before continuing their journey.

Situated on the Lewes River about 52 miles north of the British Columbia-Yukon border, the casual encampment rapidly grew into a boisterous settlement of some 20,000. Most of its residents were merely passing through on their way to or from the gold diggings. When the gold rush subsided the vigorous little boom town, having no gold, also slumped.

It probably would have become one of the numerous Klondike ghost towns if it had not been for a railroad and a steamship line. The White Pass and Yukon Railway, completed in 1900, joined Whitehorse with the outside world by way of Skagway in southeast Alaska. Steamships (illustration, next page) plied northwest from Whitehorse to settlements on the Lewes and Yukon rivers.

After a short period as a copper-mining center, Whitehorse managed to keep alive as a tourist town. It catered to parties of hunters who came to the region for moose, caribou, bear, and mountain sheep.

Is Yukon's Largest Settlement

The threat to Alaska in World War II revived the dwindling hamlet. U. S. Army Engineers arrived at Whitehorse in 1942 to work on the Alaska Highway. Later, more men came to build a large airport and to operate a refinery for the oil pumped through the Canol pipeline from Norman Wells in the Mackenzie District.

The many workers who had increased Whitehorse's population during the war went home again when war ended. But new projects gave the town hope of developing into a key center of the Yukon. In 1947, roughly three years after the war workers had gone, the population of Whitehorse was estimated at 3,500. It is the largest settlement in the territory.

Although the oil refinery has been dismantled and sold, the copper deposits which had been discovered and briefly mined after the gold rush present possibilities for an industry to support many of the townspeople. Copper-mining had been discontinued in the early days because

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lived 18 centuries ago. Among his compilations is the earliest-available catalogue of the stars.

During Europe's Dark Ages, scientific interests suffered. On the eve of the Renaissance, the Portolano, or "handy" map (based on calculations involving the stars' positions) was an outstanding aid to Mediterranean navigation. The most important mapping improvement, however, leading to the modern art, came about with the explorations and discoveries of the 15th and 16th centuries.

The first modern atlas appeared in Europe in 1570. Commercial map production was growing into big business. The term "atlas" was first used a little later by the famous Flemish cartographer, Mercator. According to the preface of his atlas, the name referred to a mythical astronomer-king of Libia, and not to the Greek god Atlas whose task was to support the world on his shoulders.

NOTE: For additional information, see "Eclipse Hunting in Brazil's Ranchland" and "Split-Second Time Runs Today's World," in the *National Geographic Magazine* for September, 1947*; "Heavens Above" and "How to Use the Star Charts," July, 1943; and "News of the Universe," July, 1939.

CARLOTTA GONZALES LAHEY

THE FIRST CONSTELLATION SINGLED OUT BY PRIMITIVE MAN AND MODERN CHILD IS URSA MAJOR

The Great Bear contains the Big Dipper. His tail forms the handle. Several ancient peoples identified this star group with a bear—though the resemblance is slight. North American Indians said the three tail stars were hunters stalking the animal. The arrow through the star Dubhe shows how Polaris, the North Star, may be found. Ursa Minor, the Little Bear, better known as the Little Dipper, hangs from Polaris—half encircled by Draco, the dragon. The National Geographic Society—Palomar Observatory Sky Survey, with its huge telescopes, will look far beyond such easily seen bodies.

of high cost of labor and of transportation. Meanwhile, Whitehorse is growing in importance as the transportation crossroads of the Yukon.

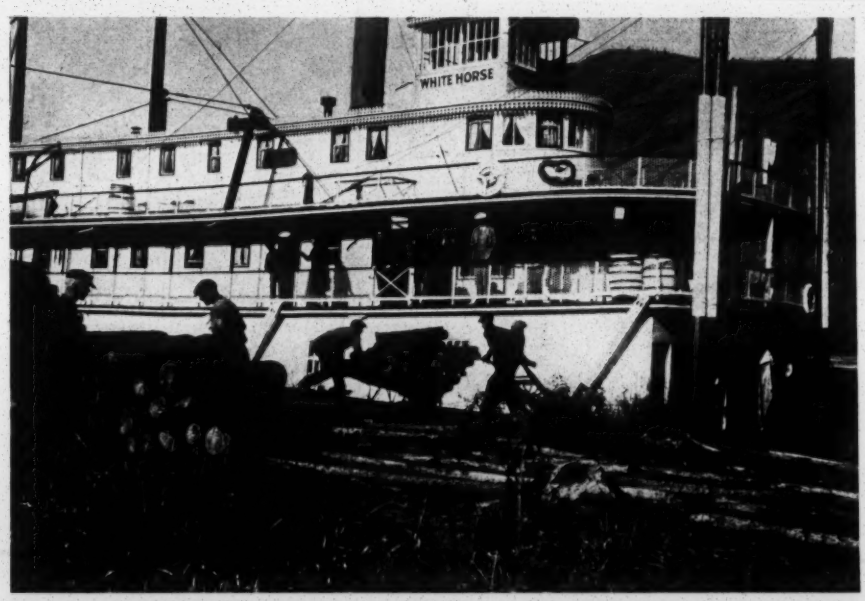
Planes from Seattle, Vancouver, Edmonton, and Fairbanks land at its airport. The Alaska Highway skirts the town and gives it an overland link with Alaska, the United States, and the rest of Canada. Other roads lead northwest to Dawson, administrative center of the Yukon, and northeast to Mayo Landing, headquarters for the silver- and lead-mining district.

Finally, its position at the head of the navigable waters of the Lewes and Yukon river system, and at the northern terminus of the White Pass and Yukon Railway gives Whitehorse importance as the far Northwest progresses.

NOTE: Whitehorse may be located on the Society's map of Canada, Alaska & Greenland.

For additional information on the region, see "First American Ascent of Mount St. Elias," in the *National Geographic Magazine* for February, 1948; "Alaska Highway an Engineering Epic," February, 1943; "Family Afoot in Yukon Wilds," May, 1942; and "To-day on 'The Yukon Trail of 1898'," July, 1930.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, March 15, 1948, "Alaska Highway Awaits Peacetime Traffic."



AMOS BURG

THE "WHITEHORSE" TAKES ON FUEL FOR ITS CRUISE DOWN TO DAWSON

Stoked with spruce logs, this woodburning sternwheeler will chug downstream from Whitehorse to Dawson—more than 400 miles—between forests that furnish its fuel. The steamer stops at several settlements, often on signal from a would-be passenger who waves from the bank. Cutting and loading the logs gives employment to numerous Whitehorse residents.

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